Roger Valdez, *Sustainable Industries* blog

Imagine an efficient system of centralized heating powered by renewable energy using underground pipes to heat water and air for multiple buildings. Sergius Orata developed just such a system. Is Sergius Orata a new experimental energy start-up from Scandinavia? Actually, he was a hydraulic engineer who did the bulk of his work about 2000 years ago in ancient Rome. Sergius is credited with significant innovation in centralized heating, specifically systems designed to heat Roman baths. That's how old the idea of district energy is.

So Sergius would feel right at home in the discussions about large scale energy efficiency, and especially recently proposed federal legislation sponsored by Rep. Betty McCollum (D-Minn), along with Sens. Al Franken (D-Minn) and Kit Bond (R-Mo). Their proposal, the Thermal Renewable Energy and Efficiency Act,would add incentives to promote the development of combined heat and power (CHP) and district energy.

Think about the building you are sitting in right now. More than likely the building has centralized heating and cooling but it also likely gets its electricity from another source. What CHP does is combine all the heating and energy needs and takes care of them from one place and with one fuel, like natural gas. District energy solutions do the same thing as CHP, but for more than one building, such as downtowns, neighborhoods, or university campuses.

What makes this energy solution appealing is that with the right fuel source, like ground source heat, district energy is a sustainable energy solution for cities looking to make an impact on carbon emissions. Seattle Steam has set the example locally by bringing a biomass boiler online late last year. The boiler produces steam using waste wood from local sources, resulting in a reduction of carbon emissions by 45,000 tonnes annually.

In Portland, two projects using district energy at the neighborhood scale have been proposed and studied. Sunnyside Energy would use ground source heat to service a local school campus and the surrounding neighborhood as well. And in the North Pearl Neighborhood, the City of Portland has found district energy to be a viable solution for potential new growth there. These projects could benefit from passage of this legislation.

Rep. McCollum's bill expands the renewable energy tax credit to the production of thermal energy, benefiting most district energy producers and encouraging new projects. The bill also expands tax exempt bonding for capital costs associated with thermal energy, and it expands the Department of Energy's Energy Sustainability and Efficiency grant program so it can more fully support large scale thermal projects.

The bill is a great start. But even more could be done to help district energy catch fire in our region. Adding a Feed-in Tariff policy to the bill-to set a price per kilowatt-hour for energy generated by a district energy project, and require a commitment from utilities to buy energy at that price for an extended period of time-would make a huge difference.. This would create a certain and consistent cash flow for district energy projects that would help make them financially viable.

Feed-in tariff policies have been in place for years in Europe-especially Germany, France, and Spain-and since last year, in Vermont. The Vermont Energy Act sets rates for purchase of energy from renewable projects at 12 cents per kWh. That's a much better number than the production tax credit which currently pays about 2.1 cents per kWh and as little as 1.1 cents per kWh for some projects. This could make district energy projects even more financially viable by creating a revenue stream for debt service and operations. It would also put more clean energy onto the grid and move our region closer to energy independence.

And like projects in Portland, the best district energy wouldn't generate power from dirty fossil fuels. Putting special emphasis on heat from the ground as the fuel source, for example, would give that idea a boost where it makes the most sense. Every project will have different economic drivers, but ground source heat at the district scale needs to get more investment to demonstrate its importance as an alternative to less sustainable sources. Sergius powered his central heating systems with wood, but ground source heating would tap into an energy source that is, quite literally, under our feet.

Ultimately the Thermal Renewable Energy and Efficiency Act would make new and wider use of a 2000 year old technology. That's a smart idea that is not only good for reducing the use of scarce resources, but can also create jobs and new economic opportunity. Sometimes the future needs some help from the past.

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